



# SENNHEISER

## ELECTRONIC CORPORATION

10 WEST 37th STREET, NEW YORK, N.Y. 10018

TELEPHONE: (212) 239-0190

### CONSUMER NET PRICE LIST 1983

effective: January 1, 1983

Model	Description	Price	Model	Description	Price
BP 2	Battery Pack	118.00	MD200	Dynamic Microphone	33.00
BP48	Battery Pack	123.00	MD211U	Dynamic Microphone	364.00
			MD214U-3	Dynamic Microphone	334.00
C3U	Clamp for K3U	5.20	MD400	Dynamic Microphone	41.00
HD40	Headphone	37.50	MD402K	Dynamic Microphone	80.00
HD40W	Headphone	37.50	MD402U	Dynamic Microphone	85.00
HD44	Headphone	49.00	MD416U	Dynamic Microphone	305.00
HD222	Headphone	128.00	MD417K	Dynamic Microphone	166.00
HD224	Headphone	153.00	DM419U	Dynamic Microphone	236.00
HD400	Headphone	49.00	MD421U	Dynamic Microphone	332.00
HD400W	Headphone	49.00	MD427U	Dynamic Microphone	232.00
HD404	Earphone	16.25	MD429U	Dynamic Microphone	310.00
HD412	Stickphone	94.50	MD431U	Dynamic Microphone	355.00
HD414	Headphone	84.00	MD441U	Dynamic Microphone	469.00
HD420	Headphone	94.00	MD9080	Dynamic Microphone	159.00
HD424	Headphone	122.00	MD908U	Dynamic Microphone	226.00
HD430	Headphone	134.00			
HD4004	TV Headphone	37.50	MD918U	Dynamic Microphone	191.00
			MD918TU	Dynamic Microphone	208.00
HGS816	Handgrip/Shockmount	142.00	ME20	Omnidir. Microphone Head	92.00
HM35	Earphone	12.00	ME40	Cardioid Microphone Head	130.00
HMD414	Headset	200.00	ME80	Shotgun Microphone Head	201.00
HMD224	Headset	220.00	ME88	Spot Microphone Head	270.00
HME410KA	Headset	335.00	MKE2-R	Mini Tie-Clip Microphone	202.00
HZB17	Ear Bow	2.20	MKE2-3	Mini Tie-Clip Microphone	242.00
HZL18	Cord	4.60	MKE2-6	Mini Tie-Clip Microphone	168.00
			MKE10	Tie-Clip Microphone	168.00
K3U	Powering Module	172.00	MKE10-3	Tie-Clip Microphone	173.00
KAT15-2U	Cable Amplifier	197.00	MKE10-6	Tie-Clip Microphone	228.00
			MKE40-3	Cardioid Tie-Clip Micr.	221.00
MC22	Cable (XLR to XLR)	18.55	MKE42	Cardioid Lectern Micr.	267.00
MC24	Cable (XLR to Pigtail)	13.75	MKE42-3	Cardioid Lectern Micr.	294.00
MC57	Cable with Transformer	47.75	MKE212-3	Boundary Microphone	499.00
			MKE2002	Binaural Microphone	525.00
MD21N	Dynamic Microphone	206.00	MKH106TU	Condenser Microphone	578.00
			MKH406TU	Condenser Microphone	678.00
			MKH406TFU	Condenser Microphone	707.00

Model	Description	Price	Model	Description	Price
MKH406P48U	Condenser Microphone	678.00	MZP816	Pistol Grip	80.50
MKH416TU	Condenser Microphone	723.00	MZQ100	Quick Release Clip	21.75
MKH416TFU	Condenser Microphone	754.00	MZQ415	Quick Release Clip	20.30
MKH416P48U	Condenser Microphone	723.00	MZQ421	Quick Release Clip	6.90
			MZQ441	Plastic Clamp	6.15
MKH816TU	Condenser Microphone	954.00	MZS1	Shockmount for MD421	16.90
MKH816TFU	Condenser Microphone	998.00	MZS105	Shockmount	42.65
MKH816P48U	Condenser Microphone	954.00	MZS142	Floor Stand	59.35
			MZS144	Floor Stand	60.40
MS10TU	Studio Adaptor AB (12V) Power Supply	162.00	MZS202	Floor Stand with Boom	86.95
MS10PU	Studio Adaptor-Phantom (12-48V) Power Supply	176.00	MZS210	Floor Stand	144.15
MS100	Headphone	85.00	MZS211	Boom	35.35
			MZS235	Bracket	13.25
MZA5	Belt Clip	9.00	MZS415	Shockmount	58.75
MZA10U	Battery Adaptor	109.00	MZS416	Shockmount	115.00
MZA15U	Battery Adaptor	103.00	MZS802	Telescopic Boom	94.35
MZA15UP	Battery Adaptor	115.50	MZS815	Shockmount	135.00
MZA216	Thread Adaptor	2.10	MZS816	Shockmount	135.00
MZA406	Universal Quick Release	12.75	MZT100	Desk Stand	72.10
MZA415	Swivel Clip for MD416U	32.90	MZT104	Desk Stand	15.60
MZA421	Mounting Bracket	25.50	MZT105	Desk Stand	31.75
MZA431	Quick Release Clamp	40.50	MZT237	Table Clamp	9.55
MZA441	Mounting Bracket	35.60	MZT441	Desk Stand	30.75
MZB415	Fishpole	321.00	MZW30	Windscreen	13.25
MZF15U	Filter	138.00	MZW40	Windscreen	27.55
MZF802U	Filter	64.70	MZW104	Windscreen	13.75
MZG415	Swivel Adaptor	29.15	MZW201	Windscreen	20.15
MZG802	Camera Mount	57.25	MZW415	Windscreen	27.55
MZH21	Goose Neck	13.75	MZW416	Windscreen for MD416U	17.50
MZK802U	Video Cable	32.85	MZW416-1	Windscreen for MD416U	14.85
MZK88	Microphone Carrier	49.00	MZW421	Windscreen	23.35
MZM10	Magnet w/Cord for MKE10	31.80	MZW426	Windscreen for MKH416	190.00
			MZW441	Windscreen	27.55
MZN16P48U	Power Supply	295.00	MZW815	Windscreen	55.00
MZN16TU	AC Power Supply	295.00	MZW816	Windscreen	207.00
MZN16TUP	AC Power Supply	331.00	MZW2002	Windscreen	51.95
			ZP3	Impedance Tester	530.00

Available from: -

All prices are F.O.B. New York Warehouse  
Prices are subject to change without prior notification  
Orders: Subject to approval by Credit Department  
This list supersedes all previous issues





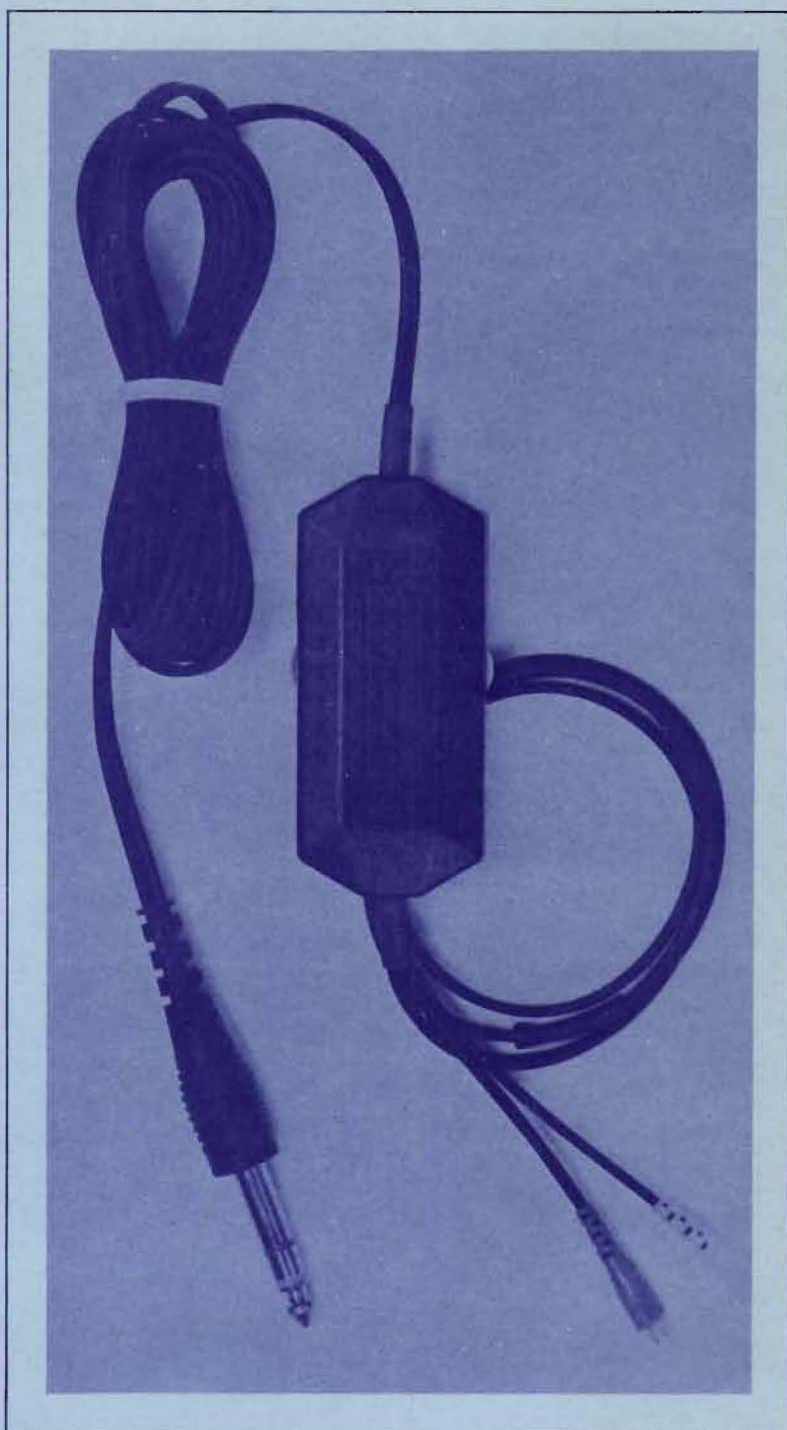
### HZR 26 HEADPHONE CABLE with Volume/Balance Controls

The HZR 26 may be retrofitted to any Sennheiser dynamic headphone which employs a standard plug-in "Y-type" cable, adding the convenience of control of volume and channel balance *at the headphone* and permitting individual adjustment for each listener in multiple-headphone systems.

The same overall length (approx. 3m/39 inches) as the standard cable, the HZR 26 is manufactured with the same durable, steel wire and terminated in a ¼-inch 3-conductor (stereo) molded phone plug. The twin linear-action volume controls are conveniently located approximately 70cm (28 inches) from the headphone end of the cable, and, when the listener is seated, can be placed in the lap for easy accessibility. The weight of the control module is only 15g (½-oz.) and has no effect on wearing comfort.

When using the HZR 26, the net impedance of the headphone plus volume control is never lower than the impedance of the headphone itself, and thus presents no additional load to the amplifier. Further, adjustment of the volume controls will not affect the volume of other headphones (or loudspeakers) connected to the same amplifier.

Although designed for optimum performance with our 600-ohm headphones, the HZR 26 will work quite satisfactorily with Sennheiser headphones ranging in impedance from 40 to 2000 ohms; the only effect being a slight change in the taper (rate of volume change relative to control-setting change) of the volume controls.



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10 West 37th Street  
New York, N.Y. 10018  
(212) 239-0190  
Manufacturing Plant:  
D-3002 Wedemark, West Germany



## ZP 3 DIGITAL READOUT IMPEDANCE METER

An indispensable test instrument, the ZP 3 has countless applications areas such as development, manufacturing and quality assurance departments, service departments and shops, sound contractors, broadcast and recording-studio maintenance, and telecommunications and industrial control systems maintenance. Convenient and accurate measurement of impedance from 1.000 ohm to 1.999 megohms may be performed at six test frequencies, with the impedance displayed on a large, easy-to-read, 3-1/2 digit liquid-crystal display. Measurement voltage is very low ( $\leq 85$  mV), enabling safe measurement of delicate items such as tape-recorder heads, microphones, transformers, musical-instrument pickups, vibration sensors, etc., without damage to windings or risk of magnetization as might occur with the use of an ohmmeter.

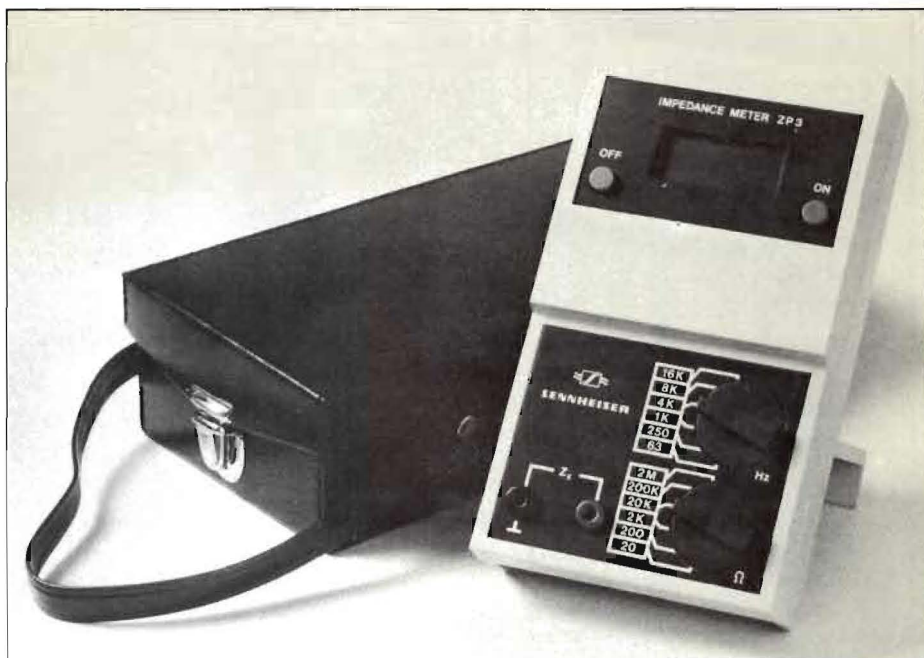
The six frequencies provided on the ZP 3 cover virtually the complete audio spectrum and are centered on ISO/IEC preferred frequencies (coincident with the center frequencies for octave, 1/2-octave and 1/3-octave filters).

Resistors may of course be measured directly; with the aid of the pocket-size plastic-laminated reactance nomograph included with the ZP 3, one can also measure inductances from 10  $\mu$ H to 5000 H and capacitances from 5 pF to 2000  $\mu$ F.

Further, when measuring simple R-C, R-L or L-C networks—or combinations thereof—containing unmarked or potted components, the availability of six measuring frequencies enables "untangling" the separate component values from the complex network via observation of the network's impedance-vs-frequency behavior.

Additionally, the ZP 3 may be used as a convenient, portable test-tone generator, providing approximately an 85 mV ( $-22$  dBV) output. (Exact output dependent on the input impedance to which the ZP 3 is connected.)

The ZP 3 is powered by two standard 9-V "transistor-radio" batteries, and automatically shuts off after approximately 3 minutes of operation. A "LoBatt" annunciator is dis-



played when the batteries need to be replaced. For added ease of use, a built-in tilt stand allows the ZP 3 to be positioned for convenient viewing.

The ZP 3 is delivered complete with test leads, alligator clips, a durable field case, and two three-color reactance nomographs (3 x 3-1/2 in. plastic-laminated and 9 x 10 in.).

### TECHNICAL DATA

#### Measurement Range:

Direct measurement of impedance, inductive/capacitive reactances, and resistors from 1.000 ohm to 1.999 megohms in six ranges: 20  $\Omega$ , 200  $\Omega$ , 2 k $\Omega$ , 20 k $\Omega$ , 200 k $\Omega$  and 2 M $\Omega$  full scale.

Indirect measurement of inductance and capacitance (10  $\mu$ H to 5000 H, 5 pF to 2000  $\mu$ F) through use of included reactance nomograph.

#### Measurement Accuracy:

$\pm 5\%$

#### Measurement Frequencies:

63, 250, 1000, 4000, 8000 and 16,000 Hz

#### Frequency Accuracy:

$\pm 5\%$

#### Voltage Applied to Test Object:

$\leq 85$  mV

#### Batteries:

Two standard 9-volt "transistor-radio" batteries (Eveready 216, 1222, 522, Mallory MN 1604, or equivalent).

#### Battery Life:

approx. 20 h (alkaline)

#### Dimensions:

approx. 187 x 106 x 49 mm  
(7-1/4 x 4-1/8 x 1-7/8 inches)

#### Weight:

Approx. 425 g (15 oz) without batteries; 825 g (29 oz) including field case and test leads, without batteries.

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We reserve the right to improve or alter product design and specifications without notice or obligation.


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Printed in U.S.A.



# INSIDE-OUT™ HEADPHONES.



Introducing Inside-Out™ MS 100 headphones from Sennheiser. If you thought you couldn't get the kind of lifelike musical reproduction from your portable that you get from the finest home equipment, prepare to think differently.

Most people who know audio know that Sennheiser's Open-Aire® design delivers sound that clearly surpasses even the most expensive home loudspeakers. It's unequalled in wide linear response, in transient ability, in ultra lightweight comfort.

Now comes the breakthrough.

For the first time you can have headphones rugged and reliable enough to bring you that same performance not only at home, but outdoors as well.

All thanks to the advanced electroacoustic technology that made Sennheiser a legend among recording studio technicians, astronauts, and audiophiles alike.

Of course, you'd expect Inside-Out headphones to cost more. But once you go to your Sennheiser dealer and put them on, you'll be so fascinated you won't want to take them off.

Inside or out.

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# HD 40 OPEN-AIRE® HEADPHONES

Feel the sound, not the weight.



Here's more proof that no one combines extraordinary sound and extraordinary comfort quite like Sennheiser.

HD 40 Headphones, weighing in at an incredible two ounces, are the lightest-weight standard series Sennheiser Open-Aire® headphones ever. Yet, despite their unusual compactness, they continue the Sennheiser tradition of superb clarity and definition over a wide frequency range. Plus rugged reliability, for years of musical enjoyment.

The Sennheiser HD 40 offers an additional advantage: a new standard of value, outperforming headphones many times its price. And the stranded-steel cable sets a new standard for durability.

For use with your portable walkaround, you can get the same kind of superb sound and easygoing comfort with the Sennheiser HD 40W.

Audition them today. You'll hear—and feel—the difference!

## HD 40

Frequency Range	22 Hz to 18,000 Hz
Impedance	600 ohms; may be used with 4-ohm to 600-ohm outputs
Sensitivity	90 dB SPL/1 mW/1 kHz
Distortion	≤1.5% THD at 94 dB SPL
Weight	2 ounces without cable
Cable	10 foot stranded-steel with molded standard ¼-inch stereo phone plug

## HD 40W

(except as noted below, all specifications are identical to the HD 40)

Impedance	42 ohms
Sensitivity	94 dB/1 mW/1 kHz
Cable	4 foot stranded-steel with stereo mini plug

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# HD 222 CLOSED-EAR HEADPHONES

For professional monitoring or luxurious private listening.



Finally, the first closed-ear headphones with the comfort and quality of Sennheiser's legendary Open-Aire® models.

By teaming ultra-lightweight diaphragms with powerful samarium-cobalt magnets, the HD 222 achieves pleasing clarity and definition as well as flat, wide response and superb dynamic range. Yet, through the use of lightweight, rugged, space-age materials, this memorable performance comes to you in an 8.8 ounce unit that is so comfortable you'll forget you're wearing headphones. And its stranded-steel cable adds durability to excellence.

Sennheiser HD 222 headphones. For the most accurate professional monitoring—or the most luxurious private listening—they're a new dimension in sound!

## HD 222

Frequency Range	20 Hz to 20,000 Hz
Impedance	600 ohms; may be used with 4-ohm to 600-ohm outputs
Sensitivity	94 dB SPL/1 mW/1 kHz
Distortion	≤1% THD at 94 dB SPL
Weight	8.8 ounces without cord
Cable	10 foot user-replaceable stranded-steel cord with molded standard ¼-inch stereo phone plug

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# HD 414 OPEN-AIRE® HEADPHONES



Improved version of the famous original Sennheiser Open-Aire headphones and an international best-seller with music-lovers who demand economy as well as impeccable performance. Offering natural sound with smooth frequency response and realistic dynamic range over the entire sound spectrum. Swivel-action headband adjusts for comfortable fit; soft, lightweight cushions caress the ears for hours of fatigue-free listening. New high-efficiency magnetic design reduces weight by over 35%.

## HD 414

Frequency Range	20 Hz to 20,000 Hz
Impedance	600 Ohms per channel
Sensitivity Nominal SPL at 1 kHz	94 dB with 1 mW input
Harmonic Distortion	Less than or equal to 1%
Weight	3 ounces (85 grams) without cable
Cord	10-foot cable with molded stereo phone plug

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Manufacturing Plant: Bissendorf/Hannover, West Germany

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# HD 424 DELUXE OPEN-AIRE® HEADPHONES



Wide, smooth frequency response that has earned rave reviews from audio critics world-wide. The HD 424 is characterized by extended transparent highs, effortless midrange and rich, fundamental bass that is felt as much as heard. Ingenious earpiece geometry and oversized foam cushions exert an absolute minimum of pressure on the ear. Adjustable, cushioned headband adds further listening enjoyment.

HD 424	
Frequency Range	16 Hz to 20,000 Hz
Impedance	2 kOhms per channel
Sensitivity Nominal	
SPL at 1 kHz	94 dB with 1 mW input
Harmonic Distortion	Less than or equal to 1%
Weight	6 ounces (170 grams) without cable
Cord	10-foot cable with molded stereo phone plug

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# HD 420 OPEN-AIRE® HEADPHONES



The latest addition to our family of Open-Aire headphones, with adjustable suspension strap and cushion-like earpads for unbelievable comfort. And truly unbelievable sound. Smoother midrange and highs. Richer bass tones. The headset for hours of listening enjoyment without discomfort or fatigue.

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**HD-420**

Frequency Range	18 Hz to 20 KHz
Impedance	600 ohms per channel
Sensitivity Nominal SPL @ 1 KHz	94 dB with 1 mW input
Harmonic Distortion	Less than 1%
Weight	4 ounces
Cable	10 foot cable and stereo phone plug

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# HD 430 NEW GENERATION OPEN AIRE®-HEADPHONES



An exclusive design advance, with adjustable suspension strap for custom fit and comfort . . . and unique ear cushions which separate the ear from contact with the pad, yet permit a total Open-Aire listening environment.

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**HD-430**

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Frequency Range	16 Hz to 20 KHz
Impedance	600 ohms per channel
Sensitivity Nominal SPL @ 1 KHz	94 dB with 1mW input
Harmonic Distortion	Less than 0.5%
Weight	7 ounces
Cable	10 foot cable and stereo phone plug

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# NEW FEATHERWEIGHT CHAMPION SENNHEISER HD 410 OPEN-AIRE® HEADPHONES

As durable as they are enjoyable.



With these new HD 410 headphones, Sennheiser has improved on the hard-to-improve. The HD 410 replaces the best-selling HD 400, but continues the Sennheiser Open-Aire® family tradition of featherweight convenience combined with sound that exceeds that of the most expensive loudspeakers.

What is more, they now come with user-replaceable, stranded-steel cables for even greater durability and light-weight versatility. The HD 410 provides clarity and definition that are extraordinarily lifelike and rich, as well as remarkably flat, wide response and excellent dynamic range.

The Sennheiser 410. Engineered for breathtaking sound, designed for elegance and simplicity, constructed to be rugged and durable.

## HD 410

Frequency Range	20 Hz to 18,000 Hz
Impedance	600 ohms; may be used with 4-ohm to 600-ohm outputs
Sensitivity	94dB SPL/1 mW/1 kHz
Distortion	≤1.2% THD at 94 dB SPL
Weight	2.8 ounces without cable
Cable	10 foot user-replaceable stranded-steel with molded standard ¼-inch stereo phone plug

## SENNHEISER®

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Manufacturing Plant: D-3002 Wedemark, West Germany



# MS 100 NEW INSIDE-OUT™ HEADPHONES



An exclusive new design in headphones that are compatible both with fine home stereo equipment and portable walkarounds... complete with 6-foot "Inside" extension cable... exclusive Sennheiser Open-Aire® technology is comfortable, lightweight, yet permits total listening environment indoors or out.

## MS 100 Inside-Out™

Frequency Range	20 Hz to 20000 Hz
Impedance	42 ohms
Sensitivity Nominal SPL at 1 KHz	96 dB
Harmonic Distortion	1%
Weight	1.4 ounces
ACCESSORIES	Outside 4-foot cable with standard mini-stereo plug Inside 6-foot extension cable with standard stereo phone plug 2 extra Open-Aire® headphone cushions

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## NEW PRODUCT INFORMATION

January 1981

MZT 100

Shock-Absorbing  
Desk Stand



Due to a great demand for a desk stand with tremendous noise suppression characteristics, Sennheiser developed the MZT 100. This stylish and very stable desk stand is suitable for all dynamic and condenser studio microphones. The MZT 100 is made of a diecast metal disc that is embedded in a rubber housing. Because this desk stand has a much higher suppression of handling noise than other stands, it is extremely suitable for use where knocking and other desk noises are unavoidable (i.e. round table discussions).

Rubber feet on the bottom of the stand prevent the unit from being pulled off the table even under high strain. The scratch-proof surface will provide a like-new appearance for years even with rough handling. A brass thread adapter is included for connecting 5/8" microphone holders.

### Specifications:

Size	-	approx. 6" diameter
Weight	-	3 lbs. (unit) - 4 lbs. (shipping)

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**SENNHEISER**

January 1981

## NEW PRODUCT INFORMATION

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MZA 5 - Beltclip for K 3 U / MS 10 TU and MS 10 PU



Sennheiser has designed a metal belt clip to allow for easier handling of the K 3 U powering module and of the MS 10 studio adapters.



ZENNEHEIMER



PRODUCT INFORMATION

USA 2 - 501511p For R 1 D 1 MG 10 TO 204 10







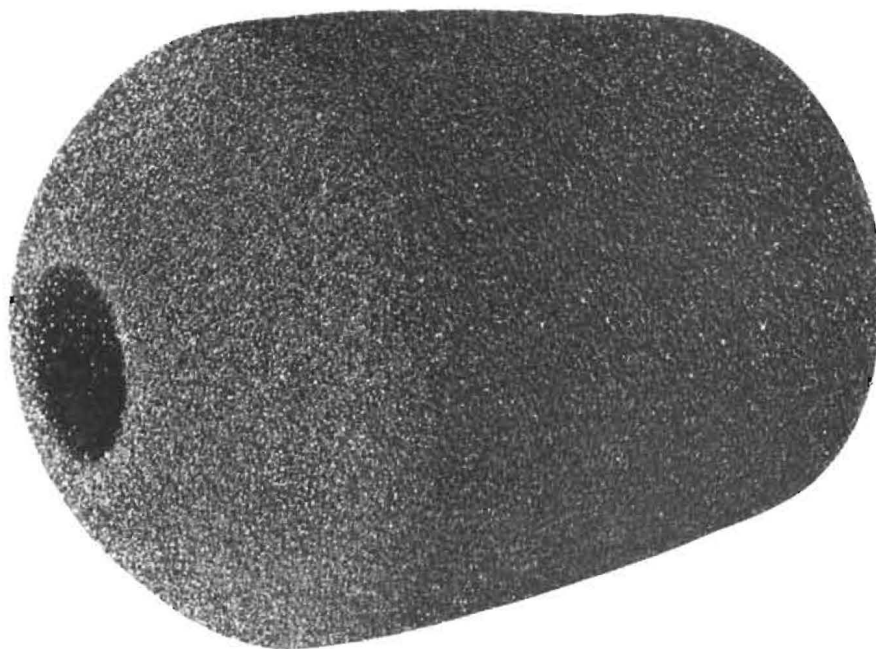
**SENNHEISER**

January 1981

**NEW PRODUCT INFORMATION**

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MZW 40 Windscreen for MD 421, MD 431 and MD 441



The MZW 40 is an extremely dense foam windscreen that is replacing Sennheiser's MZW 22 which has been taken out of production. This windscreen may be stretched so that the opening will accommodate the MD 421, MD 431 and MD 441.



# SENNHEISER

## NEW PRODUCT INFORMATION

June 1981

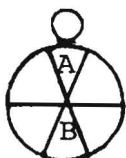
MZS - 1

### MZS-1 Shockmount for Boom-Type Applications of Sennheiser Dynamic Microphones



The MZS-1 is a new shockmount supplied by Sennheiser Electronic Corporation that will provide additional attenuation from mechanical feedback. This unit consists of two heavy-duty plastic rings suspending four layers of elastic webbing. The MZS-1 will accept Sennheiser microphones of up to 2-3/4" in diameter, making it an excellent candidate for the MD 421. This unit has the capability of being mounted in a variety of positions but the most common will be for boom-type attachment. For this particular mounting, we suggest that the MZS-1 be clipped to a C3U clamp (pictured above) or with an MZA 406 universal quick release clamp. An MZA 216 thread adapter can be screwed into the C3U to provide standard 5/8" mounting.

MZS-1



Looking at the MZS-1 straight on, as illustrated above, one would mount an MD 421, for example as follows: Slide the microphone on top of triangle A of the first elastic layer, below triangle B of the next two sections, then on top of triangle A again for the final layer of webbing. This will securely cradle the MD 421 in the middle of the shockmount. Basic mounting instructions are included with the MZS-1.

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## PRODUCT INFORMATION

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HGS 816 Handgrip  
and Shockmount



The HGS 816 Handgrip/Shockmount combination is designed for Sennheiser's line of condenser and electret microphones. The handle can be adjusted to various positions by loosening the knurled knob located on the grip. There is a 5/8" female thread located underneath the handle to allow for the HGS 816 to be mounted on either a boom or a stand. This unit is not shown in the Revue # 11, but it is described on the accessory page of the condenser leaflet.

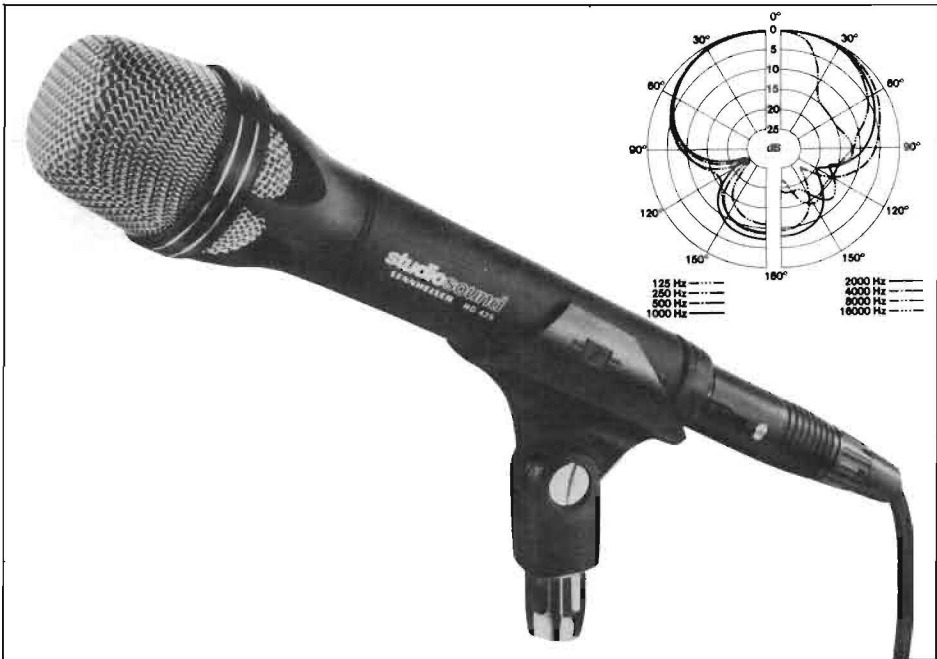
### Specifications:

Dimensions	-	8½" x 8½" (handle fully extended)
Weight	-	1 lb. (unit) - 2 lbs. (shipping)
Construction	-	metal handle and shockmount. Heavy-duty microphone clamps and shock-mounted cushions.

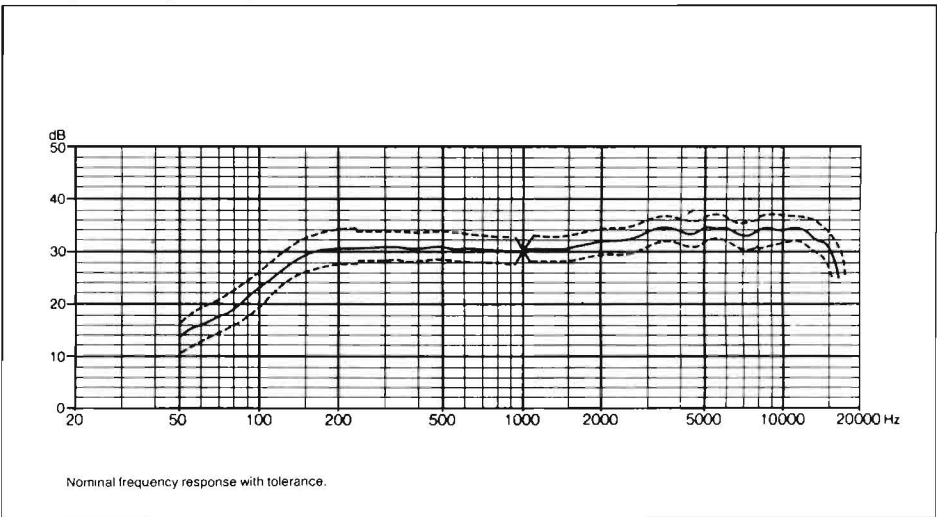
MD 429  
SUPERCARDIOID STUDIO  
DYNAMIC MICROPHONE

A descendant of the extremely successful MD 431 performer's microphone, the MD 429 was designed in response to requests for a vocal/instrument microphone specifically intended for recording-studio applications. The extended grille and contoured low-frequency response are designed to minimize pop sensitivity while controlling proximity effect, yet the full and brilliant sound character of the MD 431 is retained, giving vocals and instrumentals an outstanding naturalness and clarity. Like the MD 431, the MD 429 contains a sophisticated internal shock-suspension, resulting in relative insensitivity to normal microphone-stand transmitted mechanical shock, or handling noise. The MD 429's supercardioid polar pattern minimizes sensitivity to bleed from surrounding instruments and reduces track leakage. An internal hum-bucking coil negates interference from nearby equipment and power cables.

Although designed principally for recording-studio applications, the MD 429's characteristics also make it very suitable for live performance use, where the supercardioid polar pattern provides excellent suppression of feedback. The MD 429 has an attractive satin-black finish and is supplied complete with snap-in stand adapter and 15-foot XLR-to-XLR cable.



Frequency response curve



TECHNICAL DATA

Transducer Type:	Dynamic, moving coil
Directional Characteristic:	Supercardioid (120° null)
Frequency Range:	50 to 16,000 Hz
Nominal Impedance (1kHz):	200 ohms
Recommended Load Impedance:	≥ 1000 ohms
Sensitivity at 1 kHz * :	
Open circuit:	1.4 mV/Pa; -57 dBV
Maximum power level:	-56 dBm (re: 1 mW/10 dynes/cm <sup>2</sup> )
Tolerance:	± 2.5 dB
Hum Sensitivity:	-137 dBm (re: 1 mG, 60 Hz)
Dimensions:	200 mm (7-7/8 in.) long 31 mm (1-1/4 in.) maximum shaft diameter 49 mm (1-15/16 in.) head diameter
Weight:	220 g (8 oz.)
Phasing:	
Positive pressure arriving on-axis at the diaphragm produces a positive voltage on pin 2 relative to pin 3 of the XLR-type output connector.	

\* 1 Pa (pascal) = 10 $\mu$ b (microbar) = 10 dyne/cm<sup>2</sup> = 94 dB SPL

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New York, N.Y. 10018  
(212) 239-0190  
Manufacturing Plant:  
D-3002 Wedemark, West Germany



### MD 427 SUPERCARDIOID DYNAMIC MICROPHONE

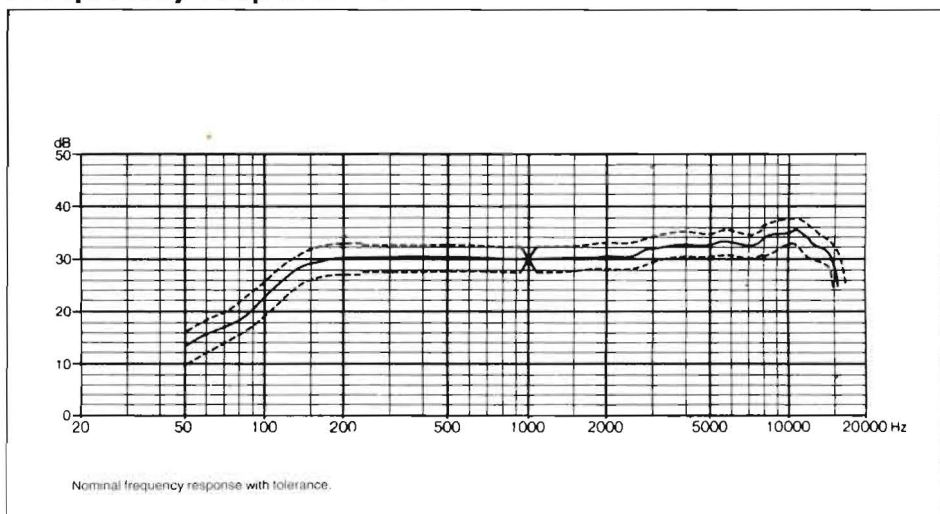
Continuing the reputation established by the MD 431 as a superior-quality performing vocalist's microphone, the MD 427 embodies the same principles of design and many of the features of the MD 431. From its triple-layer steel-mesh windscreen which provides superior pop and breath-blast protection as well as safeguarding against physical damage, to the durable snap-in stand adapter, the MD 427 is designed with the live-performance environment in mind.

The uniform supercardioid directional pattern provides excellent freedom from feedback in the most awkward of acoustic environments typical of live-performance venues, while providing a smooth, uncolored response over the front hemisphere. The MD 427's frequency response is tailored to provide a sound quality which is both warm and brilliant, projecting a clean, natural sound above instruments and hall acoustics. Special care has been taken to minimize handling noise through the use of the same type of sophisticated internal shock mount as in the MD 431. An internal hum-bucking coil prevents interference from nearby equipment and power cables. High sound-pressure levels are no problem either, for the MD 427 will effortlessly withstand even the highest sound levels found in live-performance applications.

The all-metal outer housing and black finish add to the MD 427's durability and professional appearance. The MD 427 is supplied complete with snap-in stand adapter and 15-foot XLR-to-XLR cable.



### Frequency response curve



### TECHNICAL DATA

<b>Transducer Type:</b>	Dynamic, moving coil
<b>Directional Characteristic:</b>	Supercardioid (120° null)
<b>Frequency Range:</b>	50 to 16,000 Hz
<b>Nominal Impedance (1kHz):</b>	200 ohms
<b>Recommended Load Impedance:</b>	≥1000 ohms
<b>Sensitivity at 1 kHz * :</b>	
Open circuit:	1.4 mV/Pa; -57 dBV
Maximum power level:	-56 dBm (re: 1 mW/10 dynes/cm²)
Tolerance:	± 2.5 dB
<b>Hum Sensitivity:</b>	-137 dBm (re: 1 mG, 60 Hz)
<b>Dimensions:</b>	
	185 mm (7-9/32 in.) long
	31 mm (1-1/4 in.) maximum shaft diameter
	49 mm (1-15/16 in.) head diameter
<b>Weight:</b>	200 g (7 oz.)
<b>Phasing:</b>	
	Positive pressure arriving on-axis at the diaphragm produces a positive voltage on pin 2 relative to pin 3 of the XLR-type output connector.

\* 1 Pa (pascal) = 10 μb (microbar) = 10 dyne/cm² = 94 dB SPL

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## NEW PRODUCT INFORMATION

BP 2 / BP 48  
Battery Power Sup.



Sennheiser Electronic Corporation manufactures two power supplies specifically designed for the U.S. market, called the BP 2 and BP 48. These battery-operated power packs contain bass roll-off filters and will function for 12 volt (BP 2) or 48 volt phantom powering (BP 48). They can be used to power Sennheiser condenser microphones from the --5 series to the present production models.

## Specifications;

<u>Power Source</u>	- BP 2	.....two 9 V batteries (approx. 200 hrs. life)
	- BP 48	.....two 22-1/2 V batteries

```
Roll-Off Filters .....three positions -
                                OFF, FLAT, CUT
                                Cut:  -1dB at 200 Hz
                                       -12dB/octave down
```

Connectors	.....	one male chassis	
		3-pin Cannon XLR	3
		one female chassis	
		3-pin Cannon XLR	3

Dimensions ..... 4-3/8" x 2-1/2" x 1"

Construction ..... Heavy-duty grey metal case,  
unit supplied with metal  
belt clip.

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## MZA 16 BATTERY POWER SUPPLIES

Designated as the MZA 16 P48U and MZA 16 TU, these power supplies provide 48-volt phantom powering (—P48U) or 12-volt A-B powering (—TU) for one microphone, and are compatible with Sennheiser's broad line of RF-condenser microphones. Each unit requires only a single 9-volt rectangular "transistor-radio" battery and employs a dc-to-dc converter to provide the appropriate microphone operating voltage. In addition to providing operating power, the MZA 16's contain a 0/-10/-20 dB switchable attenuator, and a switchable 12 dB per octave low-frequency rolloff filter with corner (-3 dB) frequencies of 20, 80, or 140 Hz. Additional controls are an on/off switch and a push-button battery-test switch with LED indicator.

To protect the MZA 16's from damage due to battery leakage, and to provide easy access to the battery for replacement, the battery is contained in an isolated compartment with a flip-open lid. Disassembly of the power supply or removal of its housing is *not* required for battery replacement. High-quality, spring-loaded battery contacts eliminate the traditional, fragile battery-clip/wire-lead assembly, and ensure continuity even under adverse physical conditions.

For optimum audio quality, minimum weight and lowest susceptibility to induced hum, the MZA 16's do not employ output transformers. Consequently, *dc voltages are present at the outputs*. The MZA 16's must be used with equipment (tape recorders, mixers, video cameras, etc.) having *balanced and floating inputs*. (Most professional equipment has balanced and floating inputs.) If the equipment with which an MZA 16 is to be used is balanced, but not floating, blocking capacitors may be easily installed on the MZA 16 printed-circuit board in place of two wire jumpers.

The MZA 16's are protected by a durable metal housing with black-anodized finish, and have an integral spring-loaded belt clip. Connectors are standard 3-pin XLR-type.

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Printed in U.S.A.



### TECHNICAL DATA

	MZA 16 P48U	MZA 16 TU
<b>Supply Technique:</b>	phantom	A-B
<b>Supply Voltage:</b>	48 ± 4 V	12 ± 1 V
<b>Supply Current:</b>	10 mA, maximum	
<b>Battery Current Drain (no load):</b>	≈ 3 mA	
<b>Battery Type:</b>	9 V alkaline-manganese IEC 6LF 22, Eveready 522, Mallory MN 1604 or equivalent	
<b>Battery Life:</b>	≈ 20 h (2 mA load)	≈ 25 h (6 mA load)
<b>Battery Voltage at End of Life:</b>	≈ 6.5 V	
<b>Converter Oscillator Frequency:</b>	≈ 43 kHz	
<b>Input Impedance:</b>	≈ 1800 ohms	≈ 2200 ohms
<b>Output Impedance:</b>	≈ 50 ohms	
<b>Recommended Load Impedance:</b>	≥ 600 ohms, <i>balanced and floating</i>	
<b>Maximum Signal Output Level (1000-ohm load, 1% THD):</b>	≈ 550 mV (-5 dBV)	
<b>Output Noise (1000-ohm load):</b>	≤ 1 μV rms (20 Hz—20 kHz)	
<b>Residual Oscillator Leakage at Output:</b>	≤ 10 μV rms	
<b>Attenuation (switchable):</b>	0, -10 dB, -20 dB	
<b>Low-Frequency Rolloff (switchable):</b>		
-3 dB points:	20 Hz, 80 Hz, 140 Hz	
slope:	12 dB per octave	
<b>Resultant Rolloff at 50 Hz Relative to 1 kHz:</b>	0 db, 8 dB, 14 dB	
<b>Dimensions:</b>	140 mm (5½ in.) long, 76 mm (3 in.) wide, 46 mm (1¾ in.) high	
<b>Weight:</b>	450 g (16 oz) including battery	



## MKE 2

### MINIATURE ELECTRET LAVALIER MICROPHONE

Measuring a mere 5.9 mm (approx. 0.23 inches) in diameter and 11 mm (approx. 0.43 inches) in length, the MKE 2 represents Sennheiser's thoughtfully conceived answer to the increasing demand for smaller and less conspicuous lavalier microphones. Its exceedingly small size, matte-black finish and the multitude of mounting options provide the video, motion picture and theatrical professions with a broad choice of inconspicuous or concealed microphone placement possibilities.

To facilitate convenient mounting in a wide diversity of applications, the MKE 2 is provided with a variety of attachment methods. For most applications, the miniature tie clip (shown in main photo) will hold the MKE 2 securely to ties, lapels, etc. Two such clips are supplied with the MKE 2, one finished in matte black and the other in matte nickel. (To match the two different-color tie clips provided with the MKE 2, two windscreens are also provided: one light-grey in color, and the other dark-grey.)

Extending the MKE 2's versatility, a dual safety-pin attachment (see photo inset) is also provided. To meet the needs of those requiring double mic'ing, a double-microphone tie clip is available (see photo inset). As all clothing attachment devices mount on the extremely slender (2-mm/0.08-inch diameter) cable rather than on the microphone itself, positioning options are virtually limitless, and include such possibilities as simply placing the microphone into a buttonhole or taping it to the wearer's skin. Finally, in the case of costumes, the feather-light MKE 2 may actually be sewn in place.

Beyond the MKE 2's primary application as a lavalier microphone, its pleasing sound characteristic, small size and flexibility of mounting methods make it a natural for use as a musical instrument "clip-on" microphone.

The use of back-electret technology in the MKE 2 provides a number of significant advantages. Traditional electret designs use a diaphragm which is electrostatically charged (permanently polarized), this is the electret material. Unfortunately, materials which have

the best electret properties do not have the best mechanical properties required for a diaphragm in a high-quality microphone. Sennheiser engineers, by making the back-plate the electret component, freed themselves to select a diaphragm material which possesses optimum mechanical characteristics without concern for its electret properties. One major advantage thus afforded the MKE 2 is that of an extremely thin (3.5 micrometer/0.00014 inch) and low-mass diaphragm, resulting in vastly improved transient response, extended frequency response and lower sensitivity to mechanical noise.

Further contributing to the matchless performance of the MKE 2 is its extremely small outside diameter. Such a small diameter, along with careful acoustical design, enables the MKE 2 to have an almost textbook-perfect polar pattern: uniform and frequency independent. Yet, even with such a small transducer (3 mm/0.12 in. diaphragm diameter), the MKE 2 has an A-weighted equivalent self-noise level of only 29 dB, comparing favorably with microphones having considerably larger diaphragms.

The MKE 2 is available in several versions, all employing stranded-steel cable for extended durability:

**MKE 2-3:** with connector for attachment to the K3U powering module (part of Sennheiser's modular electret system). When used with the K3U, the MKE 2 may be phantom powered (12 to 52 volts) or operated from a 5.6 V mercury battery contained in the K3U. Includes 3-position 12 dB/octave low-frequency rolloff switch. Stranded-steel cable, approximately 3-m (10-ft) long.

**MKE 2-PT:** with 3-meter (10-ft) stranded-steel cable terminating in stripped-and-tinned leads for connection to various wireless-microphone transmitters.

**MKE 2-6:** with in-line battery supply with on/off switch (type 675 mercury cell) and approximately 4-m (13-ft) stranded-steel cable terminating in a 3.5-mm diameter mini-plug.

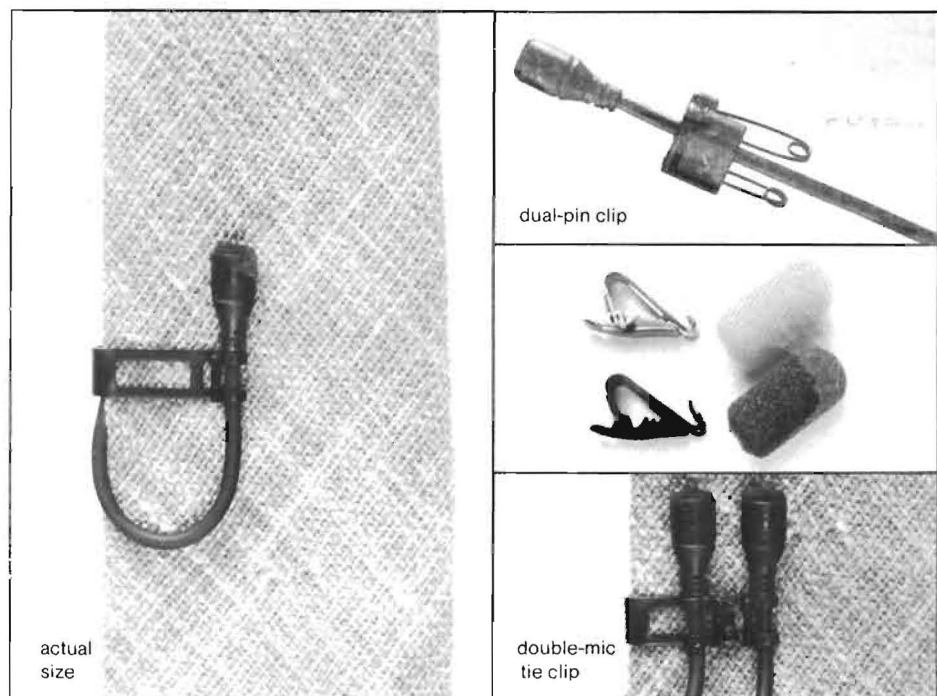
In sum, the MKE 2 is typically Sennheiser... at the pinnacle of professional quality in sound and construction.

#### TECHNICAL DATA

	MKE 2-3 (with K3U)	MKE 2-PT	MKE 2-6
Transducer Type:	back-electret condenser		
Directional Characteristic:	omnidirectional		
Frequency Range:	40—20,000 Hz		
Nominal Impedance (1 kHz):	200 ohms	1000 ohms	1000 ohms
Recommended Load Impedance:	≥ 1000 ohms	≥ 4700 ohms	≥ 2000 ohms
Sensitivity at 1 kHz*:			
Open circuit:	1.5 mV/Pa (−56.5 dBV)	10 mV/Pa (−40 dBV)	3.5 mV/Pa (−49 dBV)
Max. power level:	−55.5 dBm	N/A	N/A
Tolerance:		± 2.5 dB	
Equivalent Self-Noise Level:	≤ 36 dB SPL (DIN 45 590); ≤ 29 dB-A		

\* 1 Pa (pascal) = 10 $\mu$ b (microbar) = 10 dyne/cm<sup>2</sup> = 94 dB SPL

Continued overleaf



TECHNICAL DATA (Cont.)

	MKE 2-3 (with K3U)	MKE 2-PT	MKE 2-6
Power Requirements:	12—52 V phantom powering or internal PX 23 5.6 V mercury battery	+ 1 to + 15 V; approx. 150 $\mu$ A	type 675 1.4 V mercury cell
Battery Life:	approx. 600 h	N/A	approx. 600 h
Cable Length:	3 m (10 ft)	3 m (10 ft)	4 m (13 ft)
Connections:	pin 2 = in phase pin 3 = low pin 1 = shield	red = drain blue = source shield = ground	tip = audio sleeve = shield

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December 1981

MKE 42 Directional  
"Invisible"  
Microphone



Sennheiser has developed a slim <invisible> microphone to be used in situations where a normal microphone might appear to be too bulky or obstruct a speaker's line of vision. This new stick microphone, model MKE 42, was designed using the back-electret technique and features a kidney-shaped directional pattern. The MKE 42 can be powered using either the MS 10 TU (12 V power) or, for phantom operation, the MS 10 PU, and is connected to these units by means of an 8-pin Tuchel connector. However, both the MS 10 TU and the MS 10 PU end in a 3-pin XLR.

### Specifications:

Frequency Response	50 ... 20,000 Hz.
Directional Characteristic	Cardioid
Sensitivity	at 1 kHz-8mV/PA $\pm$ 2.5 dB
Impedance	1 k $\Omega$
S/N Ratio	approx. 64 dB
Connector	8-pin Tuchel
Finish	matt black
Powering Source	can be powered via: MS 10TU-12V ends in 3-pin XLR MS 10PU-48V phantom ends in 3-pin XLR

### Accessories:

MZW 42 Windscreen (included) - MZT 105 Desk Stand (optional)

**SALES FEATURES:** Completely unobtrusive ... broad frequency range ... extremely light ... 1.5 oz. (including power supply 7 oz.) ... can be powered from either an AB (12 V) or phantom (48 V) source.

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